**Attachment 3**

**Preliminary Storm Drainage Report**
**The Grove-3342 Humphrey Road**
**Loomis, California**

**UPDATED 4-17-17**

MEREDITH ENGINEERING
CIVIL ENGINEERING - LAND DEVELOPMENT SERVICES

## CONTENTS



APPENDICES

# 1.0 INTRODUCTION

This Storm Drainage Report has been prepared for the Tentative Map application for The Grove, a 22 lot single family home development proposal in Loomis, California.

## Purpose of Report

This report is the basis for the proposed storm drainage system proposed in the Preliminary grading and drainage plan submitted with the tentative map application for The Grove. The calculations consider both the 10yr and 100yr peak flow conditions with the proposed storm drain network designed to carry the 10yr storm and proposed grading to provide overland conveyance and onsite detention of the 100yr storm and limiting contributing flows to offsite drainage systems to less that existing 10yr flows. The system was designed to meet the criteria outlined in the Town of Loomis Land Development and Construction Standards, the Placer County Flood Control and Water Conservation District's Storm Water Management Manual and Placer County's Land Design Manual, and the. West Placer Storm Water Quality Design Manual.

## Site Characteristics

### *Existing Characteristics*

The project development ("the Site") is a 10 acre parcel located at 3342 Humphrey Road in Loomis, California and is situated southwest of the intersection of Humphrey Road and No Name Road. See the "VICINTY MAP" -Appendix A.

The elevation of the site ranges from 359 feet to 376 feet, and has moderate slopes. The current vegetation includes native grasses and a mixture of Oak and non-native trees.

The site currently conveys and discharges drainage at three locations. The Existing Conditions Shed Map is presented in Appendix B. Shed A is approximately 4.17 acres and collects drainage and directs it to a small man made pond at the northwest corner of the project. The pond has an existing 12" pipe overflow structure that conveys drainage from the pond to an existing manhole and then across no name road to a roadside ditch flowing west to Antelope Creek. Shed B is approximately 4.72 acres and collects drainage and directs it southwest overland through the adjacent subdivision. Shed C is approximately 1.11 acres and collects drainage and directs it to the southeast corner in a roadside ditch along the west side of Humphrey Road.

### *Proposed Characteristics*

The proposed subdivision includes 22 single family residential lots, four parcels in common (Lots A – D), and a public street. Lot sizes range 11,800sf to 15,000sf. Generally, the surface runoff is collected in the street or rear yard drainage ditches, directed into the storm drain system, and conveyed to detention/infiltration basin at the northwest and southeast corners of the project. The drainage from lots 5-10 will be collected in rear yard ditches and discharged at the southwest corner where drainage currently leaves the site.

## 2.0 EXISTING DRAINAGE SYSTEMS

***Existing Drainage Characteristics***

The Existing Conditions Map is presented in Appendix B.

Shed A is approximately 4.17 acres and collects drainage and directs it to a small man made pond at the northwest corner of the project. The pond has an existing 12" pipe overflow structure that conveys drainage from the pond to an existing manhole and then across no name road to a roadside ditch flowing west to Antelope Creek.

Shed B is approximately 4.72 acres and collects drainage and directs it southwest overland through the adjacent subdivision.

Shed C is approximately 1.11 acres and collects drainage and directs it to the southeast corner in a roadside ditch along the west side of Humphrey Road..

## 3.0 PROPOSED DRAINAGE SYSTEM

***Design Criteria and Assumptions***

General criteria used in determining the design of the proposed storm drainage system:

- The storm drainage system is designed to comply with Town of Loomis Land Development and Construction Standards, the Placer County Flood Control and Water Conservation District's Storm Water Management Manual and Placer County's Land Design Manual, and the. West Placer Storm Water Quality Design Manual.
- The 10yr design event is to be contained inside the pipe network.
- The system is designed to flow by gravity under the 10yr condition.
- Sized for a minimum velocity of 2.0 fps under full flow conditions.
- Overland release should the primary drainage system is inoperable.

General underlying background assumptions that were made in the design process:

- The drainage area is outside of the 100 year flood boundaries and floodways delineated and regulated by the National Flood Insurance Program.
- The "Cover Type" was assumed to be "Residential" for developed areas and "Grass, annual" or "rough grassy terrain" for undeveloped areas.
- The hydrologic soil group was assumed to be Type "B" for all areas.

***The Post-Development Condition***

The proposed storm drain system for the subdivision will divide the project into four shed areas. The proposed sheds 1-3 are shown on the "Proposed Drainage Improvements" exhibit located in Appendix C.

The contributing flows from shed areas 1 and 3 will be collected and conveyed in storm drain pipes constructed in the public street. The proposed system will discharge to a detention/infiltration basin at the northwest and southeast corners. Water quality flows will treated using infiltration in the detention/infiltration basin.

The contributing flows from shed areas 2 will be collected and conveyed in rear yard ditches. The proposed system will discharge to the adjacent property at the and southwest corner.

Should the proposed storm drain system become blocked or cease to function entirely, the drainage will overland flow in the private street to the detention/infiltration basin.

***The Post-Development Pollution Control Measures***

The storm drain system will be part of a post construction pollution control plan that will comply with requirements described in section E.12 of the state permit. Landscaped yards including trees and disconnected roof drains will be included as site design measures. The storm drain system includes the use of an infiltration basin that will be designed to treat the required water quality flows.

## 4.0 HYDRAULIC ANALYSIS

**Peak Flow Calculations**

The peak flows (Q ) were calculated using the Small Watershed Peak Flow Worksheet (Page V-18, SWM). These worksheets can be found in Appendix D, The worksheets utilize the following model parameters:

- Drainage Areas (A). See Drainage Area Map in Appendix C.
- Sites Elevation (E), the average elevation of the drainage area.
- Flow Length (L), the longest flow path in the drainage area.
- Longitudinal Slope (S), the average slope of the area's flow path.
- Manning's Roughness Coefficient (n), Table 5-5 in the SWM for overland flow, Table 8-1 for collector flows
- Response Time ($T_r$) for existing conditions, calculated using Equation 5-3 for overland flows and Equation 5-4 for collector flows

  Initial overland Tr for developed shed areas assumed to be 15in

- Unit Peak Flow (q). See Figure 5-3 in the SWM.
- Infiltration Rate (I). Table 5-3 in the SWM, is based on the "cover type" and "hydrologic soil group" design assumptions. We have used 0.48 for residential landscaping and 0.41 for dry land pasture in good condition, both in Soil Group A.
- Percent Impervious ($A_P$), represents paved surfaces and house footprint areas.
- Peak Flow ($Q_P$), Equation 5-6 in the SWM

**Drain System Summary**

A summary of the storm drain network was created in a spreadsheet format

The peak flows ($Q_P$) for each sub-basin was calculated using the "Small Watershed Peak Flow Worksheet" and were input into the spreadsheet. The spreadsheet utilizes mannings equation with a pipe N value of 0.15 to determine the velocities and capacities of proposed pipe system based on these peak flows. The following criteria were used to model the proposed system:

- The proposed drainage system consists of drainage sub-basins. (See the Proposed drainage improvements Map in Appendix C)
- All pipes are designed with mannings N value of 0.015
- The minimum pipe size for drainage network is 12 inches.
- All pipes were sized such that the Hydraulic Grade Line(HGL) slope for the 10yr peak flow was less that the pipe slope thus preventing pressure flow.

**Detention Basin Calculations**

A depth/duration analysis was prepared to show that the proposed detention basin and outfall will be suitable to hold both the 10yr and 100yr storm events. See summaries in appendix E.

**Water Quality Calculations**

Potential pollutants from the site include trash, sediment, and oils on the roadways. Water quality will be completed per the West Placer Storm Water Quality Control Manual that requires the project to provide treatment for the water quality volume resulting from 0.9 inches of rainfall on the project site. The detention/infiltration basin is sized to hold and treat the 0.9 inches volume requirement by infiltrating the water quality volume.

## 5.0 RESULTS

The flows corresponding to the on-site drainage networks under the 10-year and 100-year conditions are evaluated. This analysis involves the flow of stormwater through the systems via gravity conditions and detention of storm drainage in the proposed basin. The Drain Summary which is provided in Appendix D, presents the design flow and pipe capacity. The HGL for all the storm drain networks is maintained in the pipe and is therefore more than 1' below the rim grade and that all of the manholes and inlets should contain the 10-yr peak flows. The 100 yr flows beyond the capacity of the storm drain system will be conveyed in the street as overland flow and will discharge to the proposed basin.

The basin summaries which are provided in Appendix E, presents the design volumes and ponding depth.

**Summary of basin depth and volume**

| | Maximum Depth | | Maximum Volume | |
|---|---|---|---|---|
| | Q10 | Q100 | Q10 | Q100 |
| Basin 1 | 2.0' | 4.1' | 9,714cf | 19,820cf |
| Basin 2 | 3.1' | 4.2' | 4,676cf | 12,911cf |

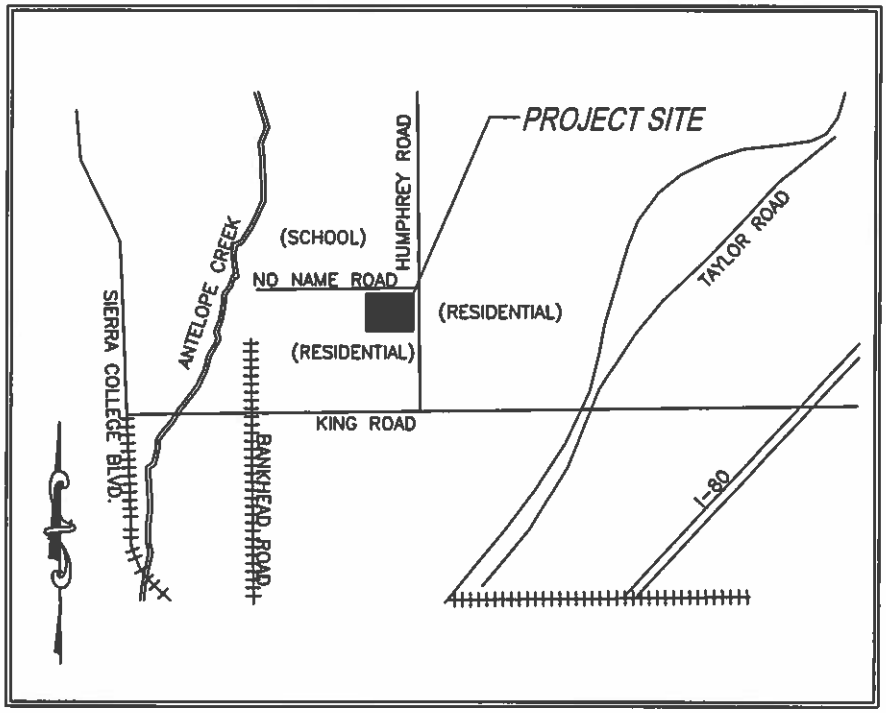
The proposed discharge points for the project match the existing discharge points. The post development flows for both the 10yr and 100yr storm events will be less than existing conditions at the discharge point.

**Summary of Pre and Post Development flows at Discharge Point**

| | Pre-development | | Post Development | |
|---|---|---|---|---|
| | Q10 | Q100 | Q10 | Q100 |
| SHED A | 2.7cfs | 6.87cfs | 2.0cfs | 2.0cfs |
| SHED B | 4.47cfs | 11.08cfs | 1.8cfs | 3.7cfs |
| SHED C | 2.05cfs | 2.61cfs | 2.0cfs | 2.0cfs |

# APPENDIX A

## Vicinity Map




VICINITY MAP

NOT TO SCALE

THE GROVE
VICINITY MAP

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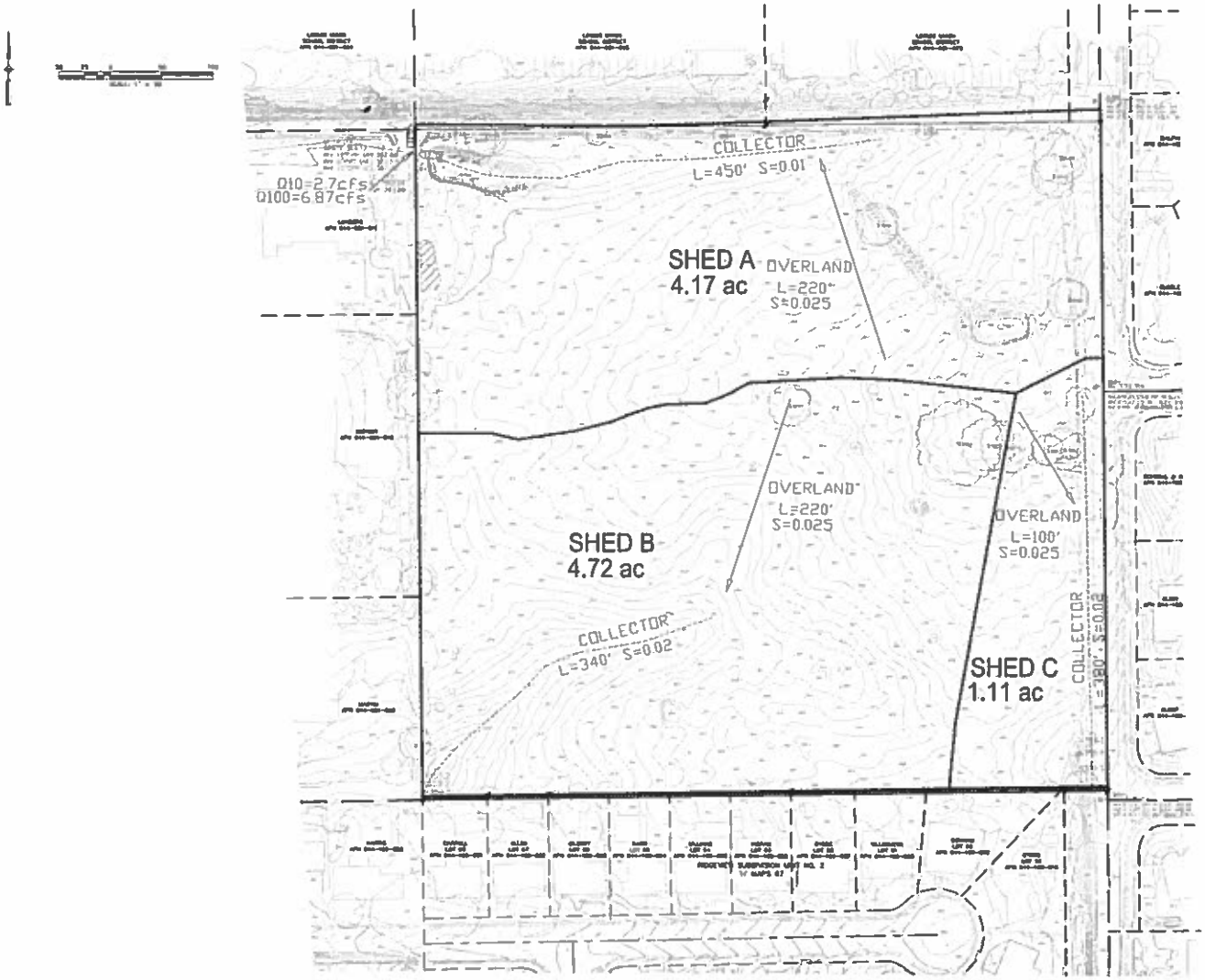
# APPENDIX B

# EXISTING WATERSHED MAPS

PRELIMINARY DRAIN STUDY

# THE GROVE
## EXISTING CONDITIONS

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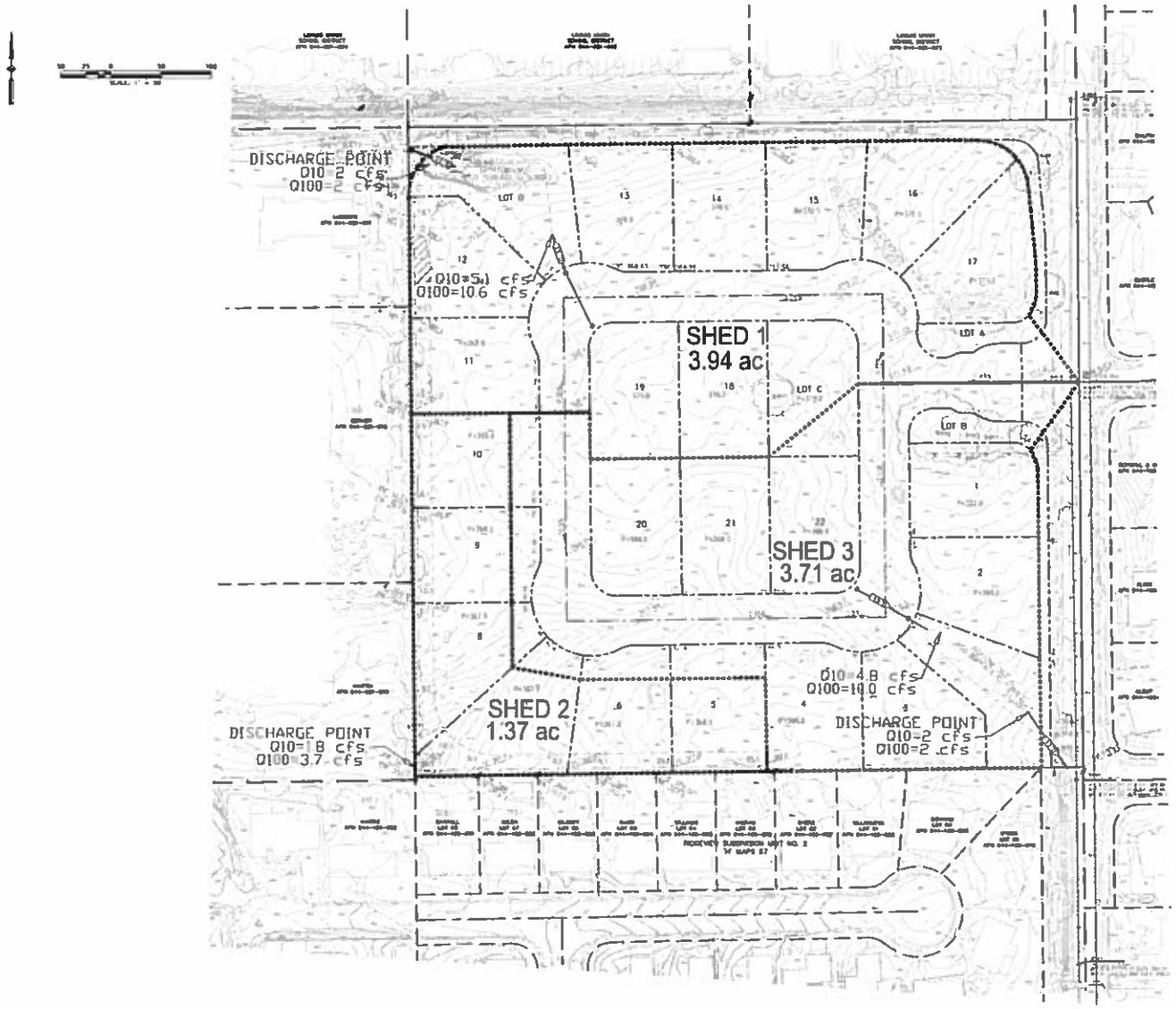
# APPENDIX C

## Proposed Drainage Improvements

PRELIMINARY DRAIN STUDY

# THE GROVE

## PROPOSED DRAINAGE IMPROVEMENTS

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# APPENDIX D

## Peak Flow Worksheets and Drain System Summary

**Pre-development Peak Flow Worksheets**

| Placer County Flood Control and Water Conservation District Small Watershed Peak Flow Worksheet | | | | | | |
|---|---|---|---|---|---|---|
| Date | 14-Aug-16 | | | | | |
| Project | The Grove | | | | | |
| Watershed | A | | | | | |
| Area, acres | 4.17 | Elevation, Feet | 365 | Return Period, Years | | 10/100 |
| | Length (feet) | Slope (V/H) | Mannings n | Contributing Area (acres) | Side Slope (ft H per 1 ft V) | Response Time (minutes) |
| Overland flow | 220 | 0.025 | 0.24 | | | 11.60 |
| Collector 1 | 450 | 0.01 | 0.24 | 4.17 | 10 | 7.96 |
| Collector 2 | | | | | | |
| Collector 3 | | | | | | |
| | | | | | Total Response Time (minutes) | 19.56 |
| | | | | | 10 YR Unit Peak Flow (cfs/acre) | 1.3 |
| | | | | | 100 YR Unit Peak Flow (cfs/acre) | 2.3 |
| Infiltration Rate (inches/hour) | | | | | 0.41 | |
| Infiltration Factor (cfs/acre) | | | | | 0.69 | |
| Percent Impervious | | | | | 0.05 | |
| Watershed Peak Flow (cfs) = Area x Unit Peak Flow - (1-Percent Impervious) x Area x Infiltration Factor | | | | | | |
| | | | | | 10 Yr Peak Flow | 2.70 |
| | | | | | 100 Yr Peak Flow | 6.87 |

| Placer County Flood Control and Water Conservation District Small Watershed Peak Flow Worksheet | | | | | | |
|---|---|---|---|---|---|---|
| Date | 14-Aug-16 | | | | | |
| Project | The Grove | | | | | |
| Watershed | B | | | | | |
| Area, acres | 4.72 | Elevation, Feet | 365 | Return Period, Years | | 10/100 |
| | Length (feet) | Slope (V/H) | Mannings n | Contributing Area (acres) | Side Slope (ft H per 1 ft V) | Response Time (minutes) |
| Overland flow | 220 | 0.025 | 0.24 | | | 11.60 |
| Collector 1 | 340 | 0.02 | 0.24 | 4.72 | 10 | 4.49 |
| Collector 2 | | | | | | |
| Collector 3 | | | | | | |
| | | | | | Total Response Time (minutes) | 16.09 |
| | | | | | 10 YR Unit Peak Flow (cfs/acre) | 1.6 |
| | | | | | 100 YR Unit Peak Flow (cfs/acre) | 3 |
| Infiltration Rate (inches/hour) | | | | | 0.41 | |
| Infiltration Factor (cfs/acre) | | | | | 0.69 | |
| Percent Impervious | | | | | 0.05 | |
| Watershed Peak Flow (cfs) = Area x Unit Peak Flow - (1-Percent Impervious) x Area x Infiltration Factor | | | | | | |
| | | | | | 10 Yr Peak Flow | 4.47 |
| | | | | | 100 Yr Peak Flow | 11.08 |

**Placer County Flood Control and Water Conservation District Small Watershed Peak Flow Worksheet**

| | | | | | | |
|---|---|---|---|---|---|---|
| Date | 14-Aug-16 | | | | | |
| Project | The Grove | | | | | |
| Watershed | C | | | | | |
| Area, acres | 1.11 | Elevation, Feet | 365 | Return Period, Years | | 10/100 |
| | Length (feet) | Slope (V/H) | Mannings n | Contributing Area (acres) | Side Slope (ft H per 1 ft V) | Response Time (minutes) |
| Overland flow | 100 | 0.025 | 0.24 | | | 7.23 |
| Collector | 380 | 0.02 | 0.24 | 1.11 | 10 | 7.21 |
| | | | | | | |
| | | | | | | |
| | | | | | Total Response Time (minutes) | 14.44 |
| | | | | | 10 YR Unit Peak Flow (cfs/acre) | 1.6 |
| | | | | | 100 YR Unit Peak Flow (cfs/acre) | 3 |
| Infiltration Rate (inches/hour) | | | | | 0.41 | |
| Infiltration Factor (cfs/acre) | | | | | 0.69 | |
| Percent Impervious | | | | | 0.05 | |

Watershed Peak Flow (cfs) = Area x Unit Peak Flow - (1-Percent Impervious) x Area x Infiltration Factor

| | |
|---|---|
| 10 Yr Peak Flow | 1.05 |
| 100 Yr Peak Flow | 2.61 |

**Post development Peak Flow Worksheets**

| Placer County Flood Control and Water Conservation District Small Watershed Peak Flow Worksheet | | | | | | |
|---|---|---|---|---|---|---|
| Date | 17-Apr-17 | | | | | |
| Project | The Grove | | | | | |
| Watershed | SHED 1 | | | | | |
| Area, acres | 3.94 | Elevation, Feet | 365 | Return Period, Years | | 10/100 |
| | Length (feet) | Slope (V/H) | Mannings n | Contributing Area (acres) | Side Slope (ft H per 1 ft V) | Response Time (minutes) |
| SHED 1 | | | | 3.94 | | 15 |
| | | | | | Total Response Time (minutes) | 15 |
| | | | | | 10 YR Unit Peak Flow (cfs/acre) | 1.7 |
| | | | | | 100 YR Unit Peak Flow (cfs/acre) | 3.1 |
| Infiltration Rate (inches/hour) | | | | | 0.48 | |
| Infiltration Factor (cfs/acre) | | | | | 0.80 | |
| Percent Impervious | | | | | 0.5 | |
| Watershed Peak Flow (cfs) = Area x Unit Peak Flow - (1-Percent Impervious) x Area x Infiltration Factor | | | | | | |
| | | | | | 10 Yr Peak Flow | 5.11 |
| | | | | | 100 Yr Peak Flow | 10.63 |

| Placer County Flood Control and Water Conservation District Small Watershed Peak Flow Worksheet | | | | | | |
|---|---|---|---|---|---|---|
| Date | 17-Apr-17 | | | | | |
| Project | The Grove | | | | | |
| Watershed | SHED 2 | | | | | |
| Area, acres | 1.37 | Elevation, Feet | 365 | Return Period, Years | | 10/100 |
| | Length (feet) | Slope (V/H) | Mannings n | Contributing Area (acres) | Side Slope (ft H per 1 ft V) | Response Time (minutes) |
| SHED 2 | | | | | | 15 |
| | | | | | Total Response Time (minutes) | 15 |
| | | | | | 10 YR Unit Peak Flow (cfs/acre) | 1.7 |
| | | | | | 100 YR Unit Peak Flow (cfs/acre) | 3.1 |
| Infiltration Rate (inches/hour) | | | | | 0.48 | |
| Infiltration Factor (cfs/acre) | | | | | 0.80 | |
| Percent Impervious | | | | | 0.5 | |
| Watershed Peak Flow (cfs) = Area x Unit Peak Flow - (1-Percent Impervious) x Area x Infiltration Factor | | | | | | |
| | | | | | 10 Yr Peak Flow | 1.78 |
| | | | | | 100 Yr Peak Flow | 3.70 |

**Placer County Flood Control and Water Conservation District Small Watershed Peak Flow Worksheet**

| | | | | | | |
|---|---|---|---|---|---|---|
| Date | 17-Apr-17 | | | | | |
| Project | The Grove | | | | | |
| Watershed | SHED 3 | | | | | |
| Area, acres | 3.71 | Elevation, Feet | 365 | Return Period, Years | | 10/100 |
| | Length (feet) | Slope (V/H) | Mannings n | Contributing Area (acres) | Side Slope (ft H per 1 ft V) | Response Time (minutes) |
| SHED 3 | | | | | | 15 |
| | | | | | Total Response Time (minutes) | 15 |
| | | | | | 10 YR Unit Peak Flow (cfs/acre) | 1.7 |
| | | | | | 100 YR Unit Peak Flow (cfs/acre) | 3.1 |
| Infiltration Rate (inches/hour) | | | | | 0.48 | |
| Infiltration Factor (cfs/acre) | | | | | 0.80 | |
| Percent Impervious | | | | | 0.5 | |

Watershed Peak Flow (cfs) = Area x Unit Peak Flow - (1-Percent Impervious) x Area x Infiltration Factor

| | |
|---|---|
| 10 Yr Peak Flow | 4.82 |
| 100 Yr Peak Flow | 10.01 |

# Drain System Summary

The Grove
DRAIN SYSTEM SUMMARY (PRELIMINARY)

MANNING 0.015

PREPARED BY: J. MEREDITH

| NODE | | $Q_{10yr}$ (cfs) | PIPE LENGTH | PIPE DIA(in) | PIPE SLOPE | PIPE CAP(cfs) | VEL @ CAP(fps) | HGL SLOPE |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| SHED 1 | | 5.11 | | 15 | 0.0082 | 5.12 | 4.17 | 0.0082 |
| | | | | | | | | |
| SHED 3 | | 4.82 | | 15 | 0.0073 | 4.83 | 3.94 | 0.0073 |
| | | | | | | | | |

# APPENDIX E

## Drain Basin Summaries

The Grove
BASIN 1-10 YR STORM DRAIN BASIN SUMMARY

ASSUMPTIONS
SHED AREA=3.94 ACRES
INFILTRATION RATE 0.48 IN/HR
BASIN BOTTOM=361.0
BASIN OUTLET=363.0
OUTLET CAPACITY=2 CFS

| DURATION | | ACCUMULATED $Q_{10yr}$ (IN.) | INCREMENTAL $Q_{10yr}$ (IN.) | DISCHARGE TO BASIN (CF) | DISCHARGE FROM BASIN (CF) | BASIN INFILTRATION (CF) | BASIN VOLUME (CF) | WATER DEPTH (FT) |
|---|---|---|---|---|---|---|---|---|
| 5 MIN | | 0.25 | 0.25 | 3576 | 0 | | 3576 | 0.74 |
| 10 MIN | | 0.36 | 0.11 | 1573 | 0 | | 5149 | 1.06 |
| 15 MIN | | 0.43 | 0.07 | 1001 | | | 6150 | 1.27 |
| 30 MIN | | 0.57 | 0.14 | 2002 | | | 8152 | 1.68 |
| 1 HR | | 0.77 | 0.20 | 2860 | 1299 | | 9714 | 2.00 |
| 2 HR | | 1.04 | 0.27 | 3862 | 3862 | | 9713 | 2.00 |
| 3 HR | | 1.23 | 0.19 | 2717 | 2717 | | 9714 | 2.00 |
| 6 HR | | 1.65 | 0.42 | 6007 | 6007 | | 9714 | 2.00 |
| 12 HR | | 2.24 | 0.59 | 8438 | 8438 | | 9714 | 2.00 |
| 24 HR | | 2.98 | 0.74 | 10584 | 10584 | | 9714 | 2.00 |
| | | | | | | | | |
| | | | | | | | | |

The Grove
BASIN 1 100 YR STORM DRAIN BASIN SUMMARY

ASSUMPTIONS
SHED AREA=3.94 ACRES
INFILTRATION RATE 0.48 IN/HR
BASIN BOTTOM=361.0
BASIN OUTLET=363.0
OUTLET CAPACITY=2 CFS

| DURATION | | ACCUMULATED $Q_{100yr}$ (IN.) | INCREMENTAL $Q_{100yr}$ (IN.) | DISCHARGE TO BASIN (CF) | DISCHARGE FROM BASIN (CF) | BASIN INFILTRATION (CF) | BASIN VOLUME (CF) | WATER DEPTH (FT) |
|---|---|---|---|---|---|---|---|---|
| 0 MIN | | 0 | 0 | 0 | 0 | | 9714 | 2.00 |
| 5 MIN | | 0.44 | 0.44 | 6293 | 600 | | 15407 | 3.17 |
| 10 MIN | | 0.62 | 0.18 | 2574 | 600 | | 17381 | 3.58 |
| 15 MIN | | 0.73 | 0.11 | 1573 | 600 | | 18355 | 3.78 |
| 30 MIN | | 0.94 | 0.21 | 3003 | 1800 | | 19558 | 4.03 |
| 1 HR | | 1.21 | 0.27 | 3862 | 3600 | | 19820 | 4.08 |
| 2 HR | | 1.59 | 0.38 | 5435 | 7200 | | 18054 | 3.72 |
| 3 HR | | 1.85 | 0.26 | 3719 | 7200 | | 14573 | 3.00 |
| 6 HR | | 2.23 | 0.38 | 5435 | 10294 | | 9714 | 2.00 |
| 12 HR | | 3.3 | 1.07 | 15303 | 15303 | | 9714 | 2.00 |
| 24 HR | | 4.25 | 0.95 | 13587 | 13587 | | 9714 | 2.00 |
| | | | | | | | | |
| | | | | | | | | |

The Grove
BASIN 2-10 YR STORM DRAIN BASIN SUMMARY

ASSUMPTIONS
SHED AREA=3.71 ACRES
INFILTRATION RATE 0.48 IN/HR
BASIN BOTTOM=362.0
BASIN OUTLET=364.0
OUTLET CAPACITY=2 CFS

| DURATION | | ACCUMULATED $Q_{10yr}$ (IN.) | INCREMENTAL $Q_{10yr}$ (IN.) | DISCHARGE TO BASIN (CF) | DISCHARGE FROM BASIN (CF) | BASIN INFILTRATION (CF) | BASIN VOLUME (CF) | WATER DEPTH (FT) |
|---|---|---|---|---|---|---|---|---|
| 5 MIN | | 0.25 | 0.25 | 3367 | 0 | | 3367 | 2.24 |
| 10 MIN | | 0.36 | 0.11 | 1481 | 600 | | 4248 | 2.83 |
| 15 MIN | | 0.43 | 0.07 | 943 | 600 | | 4591 | 3.06 |
| 30 MIN | | 0.57 | 0.14 | 1885 | 1800 | | 4676 | 3.12 |
| 1 HR | | 0.77 | 0.20 | 2693 | 3600 | | 3770 | 2.51 |
| 2 HR | | 1.04 | 0.27 | 3636 | 4406 | | 3000 | 2.00 |
| 3 HR | | 1.23 | 0.19 | 2559 | 2559 | | 3000 | 2.00 |
| 6 HR | | 1.65 | 0.42 | 5656 | 5656 | | 3000 | 2.00 |
| 12 HR | | 2.24 | 0.59 | 7946 | 7946 | | 3000 | 2.00 |
| 24 HR | | 2.98 | 0.74 | 9966 | 9966 | | 3000 | 2.00 |
| | | | | | | | | |
| | | | | | | | | |

The Grove
BASIN 2 100 YR STORM DRAIN BASIN SUMMARY

ASSUMPTIONS
SHED AREA=3.71 ACRES
INFILTRATION RATE 0.48 IN/HR
BASIN AREA= 2,600SF
BASIN BOTTOM=361.0
BASIN OUTLET=363.0
OUTLET CAPACITY=2 CFS

| DURATION | | ACCUMULATED $Q_{100yr}$ (IN.) | INCREMENTAL $Q_{100yr}$ (IN.) | DISCHARGE TO BASIN (CF) | DISCHARGE FROM BASIN (CF) | BASIN INFILTRATION (CF) | BASIN VOLUME (CF) | WATER DEPTH (FT) |
|---|---|---|---|---|---|---|---|---|
| 0 MIN | | 0 | 0 | 0 | 0 | | 3816 | 2.00 |
| 5 MIN | | 0.44 | 0.44 | 5926 | 600 | | 9142 | 3.50 |
| 10 MIN | | 0.62 | 0.18 | 2424 | 600 | | 10966 | 3.70 |
| 15 MIN | | 0.73 | 0.11 | 1481 | 600 | | 11847 | 4.00 |
| 30 MIN | | 0.94 | 0.21 | 2828 | 1800 | | 12875 | 4.20 |
| 1 HR | | 1.21 | 0.27 | 3636 | 3600 | | 12911 | 4.20 |
| 2 HR | | 1.59 | 0.38 | 5118 | 7200 | | 10829 | 3.90 |
| 3 HR | | 1.85 | 0.26 | 3501 | 7200 | | 7131 | 2.90 |
| 6 HR | | 2.23 | 0.38 | 5118 | 8433 | | 3815 | 2.00 |
| 12 HR | | 3.3 | 1.07 | 14410 | 14410 | | 3815 | 2.00 |
| 24 HR | | 4.25 | 0.95 | 12794 | 12794 | | 3815 | 2.00 |
| | | | | | | | | |
| | | | | | | | | |